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THE PLANT DISEASE REPORTER

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THE PLANT DISEASE SURVEY

Division of Mycology and Disease Survey
BUREAU OF PLANT INDUSTRY, SOILS, AND AGRICULTURAL ENGINEERING
AGRICULTURAL RESEARCH ADMINISTRATION
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The Plant Disease Reporter is issued as a service to plant pathologists throughout the United States. It contains reports, summaries, observations, and comments submitted voluntarily by qualified observers. These reports often are in the form of suggestions, queries, and opinions, frequently purely tentative, offered for consideration or discussion rather than as matters of established fact. In accepting and publishing this material the Division of Mycology and Disease Survey serves merely as an informational clearing house. It does not assume responsibility for the subject matter.

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DIVISION OF MYCOLOGY AND DISEASE SURVEY

Plant Industry Station — Beltsville, Maryland
Volume 31 — December 15, 1947 — Number 12

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BLACK SHEATH ROT OF RICE (OPHIOBOLUS ORYZINUS) CAUSED LODGING OF RICE IN ARKANSAS AND TEXAS IN 1947

Edgar C. Tullis and C. Roy Adair

Black sheath rot (Ophiobolus oryzinus Sacc.) of rice caused lodging of rice near Monticello in Drew County, Arkansas, in 1946 and 1947 and near Hockley in Harris County, Texas in 1947.

The disease has been present in Arkansas since 1923, but at no time before 1946 had it caused any appreciable loss. In 1946, it was observed in a field of Nira rice and had affected some of the plants to the extent that the culms had been killed before normal maturity of the plant and the grain of affected plants had not filled completely. In 1947, an adjacent field was planted to Prelude. In this variety, most of the plants were diseased and many of the culms had broken over as though affected by stem rot which is caused by Sclerotium oryzae Catt. It was found that the culms had broken at the nodes, not in the internodes as is the case with typical stem rot. There were no sclerotia in the sheaths or culms, but numerous perithecia containing asci and ascospores of Ophiobolus oryzinus were found in the outer sheath tissues. Examination of a variety test in this field showed that the varieties Nira, Bluebonnet, Cody, Asahi, Fortuna, Kamrose, Texas Patna, and Hill Patna were more resistant than the other varieties in the test.

In Texas, the disease also was found in a field in which a variety test was conducted. The symptoms were the same as in the Arkansas field in that the infection had caused breaking at the nodes and no fungus other than Ophiobolus oryzinus was found on the affected plants. Some lodging of the rice in the field adjacent to the test area was found and the grain of affected plants was incompletely filled.

DIVISION OF CEREAL CROPS AND DISEASES

SMALL GRAIN DISEASES AND HESSIAN FLY IN KENTUCKY IN 1947

D. A. Reid and L. M. Josephson

Most of the following observations were recorded on the Kentucky Agricultural Experiment Station Farm at Lexington and on the outlying field in Todd County, southwestern Kentucky. A few other observations were in commercial fields in the lower Ohio River Counties and in some central and western sections.

In general, weather conditions favored the development of cereal diseases particularly in the spring and early summer months. Mildew, leaf rusts and scab were promoted by frequent rains and humid weather.

BARLEY

Powdery mildew (Erysiphe graminis f. sp. hordei) was very heavy on fall sown barley at Lexington both during the fall months and again in the late spring. Fall plant growth was extremely heavy due to an unusually long fall and on susceptible varieties from 50 to 60 percent of the leaves were completely killed. Infection in the same plots was present again in the spring, and was first observed on May 8, but did not become prevalent until late in May after most varieties were headed. In general, infection was much heavier in the fall, and some varieties such as Wong showed susceptibility in the seedling stage but were resistant as mature plants. Very susceptible varieties were heavily infected in both stages. Leaf Rust (Puccinia anomala) came in rather late and while it was rather generally prevalent on all leaves, did not do a great deal of damage. The few commercial fields inspected showed from a trace to 100 percent prevalence but only 15 to 20 percent severity. No stem rust of barley was found.

Some loose smut (Ustilago nuda) was found in all fields inspected, varying from a trace to 3 percent. Covered smut (Ustilago hordei) was present in small amounts. Scab and head blight (Gibberella zeae) was present in almost all fields, up to 20 percent of heads infected in one field and from a trace to 50 percent of the kernels attacked on the heads. Net blotch (Helminthosporium teres [Pyrenophora teres]) and spot blotch (Helminthosporium sativum) were particularly noticeable on Wong and some of the new selections in the breeding nursery.

WHEAT

By far the most damaging disease on wheat in Kentucky this year was leaf rust (Puccinia rubigo-vera var. tritici). All fields inspected showed a prevalence of 20 to 100 percent. In the southwestern and Lexington areas, the infection was early enough to do considerable damage, while in the Ohio River valley area, the crop was somewhat farther along when rust became prevalent and damage was probably not so severe. In the southwestern area particularly, susceptible varieties were 100 percent infected with a maximum severity soon after heading. No stem rust was found.

Loose smut (Ustilago tritici) varied from a trace in some fields to 20 percent in one field in Daviess County on the Ohio River. Scab and head blights were rather generally prevalent over most fields, mostly limited to a few kernels on a head. In one field 7 percent of the heads were infected from a trace to 50 percent on the heads.

In spite of an abnormally late spring Hessan Fly did considerable damage to wheat in the southwestern area. Damage was limited largely to straw breakage which became fairly severe in fields which could not be combined when ripe because of wet weather. However, damage from the spring brood was not generally so severe as in either of the past two years.

Septoria leaf spot and glume blotch [S. nodorum] were present in many fields and many varieties at the Experiment Station but the amount of damage caused is questionable. Bunt [Tilletia sp.] was prevalent on the Thorne variety at Lexington from carry over on untreated seed.

OATS

Crown rust (Puccinia coronata) was fairly prevalent on fall sown oats in the Todd County field although not nearly so heavy as leaf rust on wheat and the crop matured before extensive damage was done. At Lexington the infection on spring oats was scattered and rather light, except in spotted areas.

Helminthosporium victoriae was again very heavy on spring sown oats at Lexington, making it possible to discard many selections on the basis of their reaction to this disease. Seed treatment was fairly effective in controlling the disease in the seedling stage but later infections practically destroyed the susceptible varieties, most of them yielding only 15 to 20 percent of the resistant kinds. In plot tests Osage, Vicland and Vikota were damaged the most followed by Ventura, Neosho, Boone and Cedar, and while Tama and Forvic showed somewhat less damage, they could still be considered a failure. Some of the new strains with Victoria in the parentage were susceptible, while others apparently did not inherit this suceptibility. No definite cases of infection were noticed in fall sown oats even on Victoria derivatives. Yields and test weights of some resistant and susceptible varieties and strains grown at Lexington are as follows:

C.I. No.	Variety	Yield Bushels per acre	Test Weight
4141	Neosho[a]	23.3	29.2
3991	Osage[a]	12.4	18.0
3327	Fulton	49.7	30.4
4170	Andrew	52.9	32.5
839	Kanota	41.0	29.9
3502	Tama[a]	19.6	*
3971	Clinton	47.0	32.2
3910	Benton	51.3	32.9
4328	Mindo	54.3	31.8
2820	Columbia	55.3	33.3
3305	Boone[a]	22.9	26.2

*Sample too small [a] H. victoriae-susceptible varieties

UNIVERSITY OF KENTUCKY, LEXINGTON

OAT DISEASES IN ARKANSAS, 1946-47

H. R. Rosen

Despite the very dry fall of 1946 which resulted in much late planting and poor stands, the acreage of oats in Arkansas increased 21 percent over the previous year, and the yield average of 31 bushels is the highest on record for the State. Compared with a long time average of about 20 bushels, it is an encouraging sign of the utilization and importance of disease control although it cannot be claimed that all this increase is due to the use of disease resistant varieties.

Winter injury. Partly because of late fall planting coupled with inadequate seed bed preparation and relatively low seeding rates, winter injury was common and quite severe, even with fairly hardy varieties (minimum -1° F. without snow cover). In nonhardy varieties such as Fulghum 708, Fulghum X Bond 4076-16 and Victorgrain Str. 6, the percentage of survival was reduced to 15 to 50 percent.

In a test with Traveler oats involving 4 planting dates and 3 different rates, the lowest rate of seeding (2 bushels per acre), and the latest date (October 28), yielded 48.7 bushels per acre, compared with 106.1 bushels per acre resulting from a 3-bushel seeding rate on September 30. Most of this difference in yield could be attributed to difference in amount of winter injury; the percentage of survival on March 19 was estimated as 40 percent for the late seeding compared with 90 percent for the earlier seeding. However, even at the late seeding, when the rate of seeding was increased to 3 and 4 bushels per acre, the percentage of survival was increased and the yields correspondingly increased. The yields of all the plots (3 replicates for each test, 1/50 acre drill plots) on the last seeding date, October 28, compared with percentages of survival are shown in the following table.

Rate of Seeding (bu. per acre)	Percentage of Survival	Yield (bu. per acre)
2	40	48.7
3	70	82.5
4	80	83.3

The yields in the above table may have particular significance for northern Arkansas, and comparable parts of Oklahoma and Tennessee. They seemingly indicate that even with severe winters as in 1946-47, a hardy Victoria derivative, such as Traveler, may be planted late to enable escape from Helminthosporium blight and yet permit satisfactory yields when the seeding rate is increased to 3 or 4 bushels per acre.

Anthracnose. As in the previous year (PDR 30: 364-366), anthracnose was very common and noted all through the growing season beginning with the rosette stage. It was found in every important oat-growing county in the State, some 50-odd in number, as revealed in a survey conducted during May and June. The percentage of plants infected varied from about 50 to 100 percent, the latter being most common. As to severity or amount of injury, it was rather difficult to obtain an accurate estimate because of the prevalence of leaf spot or Helminthosporium blight or both on the same plants. On Victoria derivatives, all three diseases were nearly always present while on Bond derivatives, both leaf spot and anthracnose were usually present.

In addition to the symptoms described in PDR 30: 364-366, artificial inoculations by means of hypodermic-needle injections on young shoots of Lee and of a Mutica-Bond derivative, with spore suspensions of Colletotrichum graminicolum, resulted in severe killing of upper stem tissues, often resulting in sterile panicles. Contrasted with such inoculations, spraying with spore suspensions on seedlings grown in a greenhouse resulted in much more localized lesions on sheaths and blades.

If there are any resistant varieties, they have not been noted. While Red Rustproof strains usually show less killing of tissues under field conditions than Victoria or Bond derivatives, no marked difference in number of infections has been recorded. Spring planted varieties developed about as many infections as fall planted ones.

In a trip through Arkansas, Missouri and up to Ames, Iowa, anthracnose became less abundant as one went farther north. While this disease was not rare in Ames, it was insignificant compared with the amount found at Fayetteville, Arkansas. On the varieties Clinton and Benton, anthracnose in the form of more or less localized lesions on sheaths or blades rarely appeared on more than one or two leaves per shoot when the plants were in the late milk stage at Ames. On the same varieties grown at Fayetteville at a comparable stage, this disease often appeared on over 40 percent of the leaf areas. There was probably three or more times as much anthracnose in Arkansas as in Iowa on the same varieties, and it would not be surprising if studies on temperature relationships and possibly differences in other environmental factors would explain the inequalities in the amount of disease.

Were it not for the comparatively good State average yield in 1947 as well as in 1946, the writer would not hesitate to attribute a loss of at least 20 percent in yield for the State as a whole. It may well be that comparatively good yields are obscuring the losses from anthracnose, much as they do with leaf rust on wheat when it is abundant at heading time. However, without adequate checks, in the form of resistant varieties, it is probably safer to attribute a loss of not more than 5 to 10 percent from anthracnose.

Leaf Spot. Next to anthracnose, Helminthosporium leaf spot (leaf blotch (Pyrenophora avenae)) was probably the most common and important parasitic disease on oats in 1947. There is some evidence that this disease was at times confused with Helminthosporium blight since specimens received from growers and county agents with inquiries concerning the latter disease often showed only leaf spot. With a continued expansion of acreage of Victoria derivatives, including the varieties Traveler, Fulgrain, Victorgrain, and Stanton, and with a too often repeated failure to rotate with other crops, both of these have become more abundant. Under such conditions, seed treatment with organic mercury preparations has not given the degree of control that might otherwise be expected.

Contrasted with Red Rustproof strains, Victoria derivatives showed much more leaf spot. (Bond derivatives are not grown commercially up to the present.) As with anthracnose, it is difficult to estimate losses from leaf spot but it may be recorded that it was only an occasional leaf which failed to show some of this disease when the plants reached the milk stage. Maturing panicles with healthy green foliage in abundance have become almost a thing of the past even with Red Rustproof strains, largely because of the increased prevalence of anthracnose and leaf spot.

Helminthosporium blight. Although Helminthosporium blight [Helminthosporium victoriae] was found in every important oat growing county in the State in 1947 and hardly a plant of any Victoria derivative could be found to be wholly free from infection, the amount of damage that could be attributed to this disease was considerably less than for anthracnose or leaf spot. Where there was no crop rotation or seed treatment there was probably a reduction in yield in susceptible varieties due to this disease. However, during the course of the survey, so few fields were noted as being severely affected--these being almost wholly located in the extreme southern part of the State--that the disease could be dismissed as of minor importance in Arkansas in 1947.

These observations were at such variance with reports from the corn belt or from most of the spring oat regions that it appeared desirable to observe this disease in the corn belt and especially in Iowa where it had been noted by competent observers as causing very severe losses.

The writer's observations in the northern parts of Missouri and in Iowa fully confirm the reports relative to the destructiveness of Helminthosporium blight on Victoria derivatives in these States. Poor stands, poor stooling, broken and lodged straw, short straw, small panicles, premature ripening, blackening of lower nodes, water-soaked appearance of lowest internodes, --all of these symptoms were obvious in every field of Vicland, Tama, Boone, Cedar, or Control that was examined. No such destructiveness had been observed in a 2,000-mile

survey in Arkansas. Furthermore, whenever another variety of oat of non-Victoria parentage grew close by a Victoria derivative in Missouri or Iowa, as Columbia in Missouri or Benton, Clinton, or Marion in Iowa, the contrast in health and productivity was usually so great that with a little experience one could identify a Victoria-type variety even at a distance. Even where seed had been treated with an organic mercury compound there was still much blight on susceptible varieties.

The explanation for the greater prevalence and destructiveness of this disease in Iowa than in Arkansas is probably associated largely with temperature differences during the growth of the crop. In Arkansas most of the oat acreage is of winter oats, in Iowa it is wholly spring planted. With the exception of the southern part of Arkansas, mean monthly temperatures during the growth of the crop up to the dough stage are usually below 70° F. In Iowa a considerable part of the growth is made in midsummer temperatures of 70° or above. Under controlled conditions in artificial inoculations, the number and severity of infections are considerably reduced at temperatures below 70° F.

If preliminary studies of temperature relationships may be accepted as a guide, we may expect this disease to be prevalent on susceptible varieties when planted early in September in all parts of Arkansas. In the southern part of the State it may be prevalent as a seedling blight when planted early in October. This appears to be consistent with field observations.

Since fall-sown oats are often planted for winter pasture, as well as for grain yields, and as adequate pasturage is usually not obtainable when planted in late October or beyond, it appears doubtful if any Victoria derivative should be recommended for the extreme southern part of Arkansas. For this area, the Red Rustproofs appear to offer most at present.

As far as the extreme southern tier of States is concerned, with the exception of hilly areas, there can be little doubt that varieties susceptible to Helminthosporium blight are likely to develop considerable disease.

However, so far as the northern half of Arkansas is concerned and probably like areas in Oklahoma and Tennessee, there appears to be little evidence for assuming that Victoria derivatives are on their way out because of Helminthosporium blight. For example, here are the 1947 yields in bushels per acre in the varietal test plots of winter oats grown at the university farm, Fayetteville, comparing Victoria derivatives with Bond derivatives:

1947 Oat Yields of Victoria and Bond Derivatives, Fayetteville, Arkansas

Victoria Derivatives		Bond Derivatives	
Traveler	88.9 bu.	Fulghum X Bond 4076-1	87.8 bu.
Stanton Str. 4	85.4 bu.	Tenn. 1922 X (Bond-Iogold) R19-37a(3)	87.7 bu.
Letoria	83.2 bu.	R19-53-4h	86.8 bu.
DeSoto	76.8 bu.	R22-36b	82.4 bu.
Marmac	72.6 bu.	Tennex X Bond R10-8d	81.6 bu.
Victorgrain Str. 6.	62.2 bu.	Tenn. 1922 X (Bond-Iogold) R19-69c	80.3 bu.
Fulgrain Str. 8	60.9 bu.	Fulghum X Bond 4076-16	56.1 bu.

Smuts.[Ustilago spp.] Unlike 1946, the current season appeared quite favorable for smut development and for the first time in 3 decades, considerable quantities of smut were found on Red Rustproofs, varying from a trace to over 20 percent of the panicles. The average approximated about 5 percent. However, on Victoria derivatives there was very little smut.

Halo blight. Taking the State as a whole, halo blight (Pseudomonas coronafaciens) was of negligible importance. However, in a 2 1/2 acre increase block of a spring type of Mutica derivative at the university farm, Fayetteville, this disease killed approximately 25 percent of the leaf area prior to heading and blocked consideration for release of a new variety that showed high resistance to crown rust, stem rust, and smut, and that outyielded all other varieties in 1946 in the varietal test plots of both winter and spring oats. It failed to maintain its position in yielding ability in 1947 seemingly because of halo blight.

Crown rust. [Puccinia coronata]. Probably because of an exceptionally cool spring coupled with a dry period in the early part, crown rust pustules appeared about a month later than usual (first pustules observed at Fayetteville on May 19). It was even less prevalent than in 1946, a year of light infections. Except for a few heavy infections on susceptible varieties in very localized areas, the disease was insignificant for the State as a whole.

AGRICULTURAL EXPERIMENT STATION, UNIVERSITY OF ARKANSAS

RELATIVE EFFECTIVENESS OF CERTAIN FUNGICIDES AS SEED PROTECTANTS AND DISINFECTANTS

R. W. Leukel

The need in the United States for a central agency for testing seed treatments is often keenly felt. From this laboratory one could obtain promptly reliable data on the relative effectiveness of new seed treatment materials as they appear upon the market. The lack of such information often makes it difficult or impossible to answer satisfactorily the numerous inquiries received regarding the merits of such materials.

Undoubtedly many tests of such fungicides for the treatment of seed of various crops are made every year by investigators throughout the country. The information thus obtained, however, is not always made immediately available to others, because it often remains buried for a year or more in the workers' notebooks.

During the past year, many inquiries were received regarding the advisability of using a relatively unknown and untested complex organic mercury fungicide for cereal seeds in place of New Improved Ceresan. The latter fungicide, which is known to be effective, was at times hard to obtain because the demand exceeded the supply. Several workers stated that they were testing this new fungicide, but as yet, no published reports of these tests have been observed. It is suggested that these results if published would be of great interest to other investigators at the present time.

The two materials referred to above, along with several others, were included by the writer in experiments in the spring and summer of 1947 to test their relative effect on improving emergence and controlling smut in sorghum. Seed of this crop is rather useful as a "guinea pig" for testing the seed-protectant qualities of fungicides in the greenhouse because of its ready reaction to differences in soil temperature and moisture and to soil-inhabiting fungi. It is less desirable for testing the seed-disinfectant properties of fungicides because of the large acreage required to grow a population of mature plants sufficient for an adequate test.

Seed of Sharon kafir, Leoti sorgo, and Scarborough broomcorn, 2, 4, and 8 years old respectively, was dusted with spores of covered kernel smut (Sphacelotheca sorghi) and separate portions of each seed lot were then treated, each with a different fungicide. The seed was planted one inch deep in boxes of unsterilized soil, 3 replicates of 100 seeds each for each seed lot and each fungicide. A temperature of 25° C. was maintained for 7 days, after which time, data on emergence were taken.

Table 1. Effect of different seed treatments on emergence in sorghum planted in a greenhouse kept at 25° C., and on the occurrence of covered kernel smut on plants in the fields, Beltsville, Maryland, 1947.

	Seed Treatment		Percent emergence[a] in			Smutted heads in			
			Sharon	Leoti	Scarborough	Sharon		Leoti	
No.	Material	Oz. per bushel	kafir	sorgo	broomcorn	No.	%	No.	%
1	N. I. Ceresan	0.5	93	74	67	0	0	0	0
2	Ceresan M	0.5	90	77	69	0	0	0	0
3	Ceresan M - S.F.[b]	0.5	90	78	71	0	0	0	0
4	Spergon	2	95	64	55	0	0	1	0.3
5	Phygon	2	90	75	75	0	0	0	0
6	Arasan	2	94	73	70	0	0	0	0
7	Arasan S.F.[b]	2	90	71	70	1	0.2	0	0
8	Dow 9-B	2	91	49	42	0	0	9	4.7
9	Fermate	2	75	56	62	1	0.2	6	2.0
--	No treatment	--	72	43	37	67	17.8	63	24.4
10	Zerlate	2	87	41	50	0	0	5	1.3
11	Dithane-10	2	75	47	51	46	11.6	50	20.0
12	Sulfur (100-mesh)	2	72	35	48	13	3.3	6	2.8
13	Same plus 1/3 MgO	3	74	48	31	1	0.3	11	4.4
14	MgO	1	77	53	42	26	6.9	67	22.3
15	Sulfur (300-mesh)	2	69	39	42	0	0	0	0
16	Same plus 1/3 MgO	3	69	47	38	3	0.7	1	0.4
17	Parsons Seed Saver[c]	0.5	72	39	41	2	0.4	9	4.5
18	Copper carbonate	2	89	54	40	0	0	2	0.7
--	No treatment	--	74	49	46	45	12.7	45	19.7
	(Average of checks)	--	73	46	42	56	15.4	54	22.2

[a] Significant increases over check are underscored

[b] Applied as a slurry

[c] Contains 5.15 percent para tertiary octyl phenoxy ethoxy ethyl dimethyl mercuric benzyl ammonium chloride

A field planting was made June 5. Two hundred seeds per 30-foot row, replicated 3 times, were planted for each combination of seed and fungicide. Irregularity in emergence due to poor field drainage made data on stand meaningless. The data on emergence in the laboratory and greenhouse, along with the data on smut control in the field, are shown in Table 1. Field data on the broomcorn were not obtained.

Seven of the treatments (Numbers 1 to 7) increased emergence significantly in all three varieties and also controlled smut satisfactorily. Two others, copper carbonate and sulfur (300-mesh) controlled smut fairly well but failed to increase emergence significantly. The low percentages of smutted heads in the checks, however, failed to furnish a very severe test for the fungicides. The data indicate that none of the new hitherto untested materials is a satisfactory substitute for New Improved Ceresan in cereal seed treatment.

DIVISION OF CEREAL CROPS AND DISEASES

BIG BUD OF TOMATO FOUND IN CENTRAL CALIFORNIA

Donald M. Coe and George E. Altstatt

On September 2, 1947, a tomato plant was received by the Bureau of Plant Pathology of the California Department of Agriculture from San Joaquin County for diagnosis. The plant was dwarfed, bushy in appearance, and the leaflets toward the ends of the branches were progressively smaller until they were reduced to purple-tinged gland-like organs. Accompanying this development was extreme proliferation of the branches, producing the appearance of rosette. The flower buds were enlarged and bladder-like. The carpels and pistils had become a phylloid. An examination of the internal tissues of the stem showed hypertrophy of the inner phloem producing large masses of tissue composed of small, thin walled cells. From these features it was concluded that the plant was affected with the big bud virus (Galla australiensis Holmes).

San Joaquin County Agricultural Inspectors called attention to two more plants similarly affected in other fields. These plants were not so dwarfed but the symptoms were distinct. On these plants some fruit was being produced that was of poor color and texture. The lignification of the fibrovascular bundles in some fruits was distinctly noticeable when cutting cross sections of the fruits. Distorted buds were found in which the calyx formed a "bladder" one inch in diameter and over two inches long.

At the present time this office has records of four occurrences of

this disease in California--three in San Joaquin County and one in Sacramento County. In all instances the variety was Pearson. Only one plant in each location has been found. [The Plant Disease Survey has a record of big bud of tomato reported by John T. Middleton in Riverside and San Diego Counties in 1940.]

BUREAU OF PLANT PATHOLOGY
CALIFORNIA DEPARTMENT OF AGRICULTURE, SACRAMENTO

CONTROL OF BLACK ROT OF CABBAGE IN NEW YORK

Charles Chupp

W. J. Klotzbach, assistant county agricultural agent of Cayuga County, New York, in a letter dated October 27 calls attention to an interesting possibility in the control of black rot. One of the local growers had a field of cabbage badly infected with a disease which the Department of Plant Pathology at Cornell diagnosed as black rot. The grower had potatoes planted immediately adjoining the field of cabbage, and in making a full strip for the sprayer the last time through the field, he sprayed four rows of the cabbage six times with bordeaux mixture 10-5-100 plus two pounds of DDT and at the rate of 100 gallons an acre for each application. Although these four sprayed rows were set with plants from the same seed bed as the remainder of the field, and otherwise were treated in the same manner, they were almost completely free of disease. All the other rows in the same field were seiously infected. A superficial survey of the literature on the subject does not seem to mention any instance where an attempt had been made in controlling Xanthomonas campestris by sprays or dusts.

CORNELL UNIVERSITY, ITHACA

STEMPHYLIUM CUCURBITACEARUM ON CUCUMBER

Charles Chupp

G. A. Osner deposited some of the co-type material of his Stemphylium in the Cornell Herbarium. An examination of this specimen showed no true pathogen, but a trace of what probably is the weakly pathogenic organism, Stemphylium botryosum Wallr. This appeared rather plainly not the direct cause of the numerous leaf spots, which resembled closely the bacterial angular leaf spot.

One of the plant pathologists at Purdue University informed me that no disease of cucumber caused by a Stemphylium had been reported in the State during the past thirty years. He kindly had the Stemphylium folder from their herbarium sent to me. None of these collections, including some of the co-type material, showed any fungus pathogen. The lesions resembled the ones caused by Pseudomonas lachrymans. Therefore, Dr. W. H. Burkholder was requested to examine the diseased tissues for the presence of bacteria. Among 4 specimens that he examined he found 3, the tissues of which were filled with bacteria. Among the three was one labeled "part of cotype."

It seems fairly certain, therefore, that the disease supposedly caused by Stemphylium cucurbitacearum Osner, and found in 1915, is identical with the angular leaf spot, having as its pathogen, Pseudomonas lachrymans and described in 1915.

CORNELL UNIVERSITY, ITHACA

CAN TOBACCO PLANT BEDS IN KENTUCKY AND TENNESSEE BE INFECTED BY PERONOSPORA TABACINA BLOWN IN FROM TEXAS?

W. D. Valleau

At the Tifton meeting of the Tobacco Disease Council, in the summer of 1946, following a long discussion of the writer's proposal for eradication of the blue mold [downy mildew] fungus in Georgia and Florida, the fact was brought out by Mr. Gaines that the flue-cured tobacco industry in Georgia was in its infancy in 1921 and largely confined to a small area along the Georgia-Florida line. Carry-over of Peronospora tabacina in this area has been reported as extremely light since 1931. With a very limited tobacco area in south Georgia in 1921, and evidence of poor conditions for carry-over since 1931, it is not surprising that the fungus did not persist following its first appearance. By 1931 flue-cured tobacco was being grown extensively in Georgia, and the fungus became established in a much larger area farther north than in 1921, where it has continued to persist. If eradicated one year it could easily become established again if spores were blown in from Texas. Assuming that the fungus found by Godfrey in Texas was the same as that on cultivated tobacco, the impracticability of eradication in Georgia became evident.

In early March 1947 Dr. F. A. Wolf made a trip to Texas to study the downy mildew fungus on Nicotiana repanda and other native species of Nicotiana (Phytopathology 37: 721-729, 1947). He found an abundance of N. repanda heavily infected with Peronospora tabacina which was fruiting abundantly. This leaves little doubt that the outbreaks in

the Georgia-Florida area in 1921 and 1931 originated from spores blown in from Texas. While eradication under present conditions may be impossible, Clayton's reports of the development of blue-mold-resistant tobacco-like plants raise the hope that blue mold may eventually be eradicated in Georgia through the introduction of resistant varieties.

The writer has already shown that in the absence of an outside source of infection P. tabacina is likely to disappear completely from Tennessee and Kentucky (Phytopathology 34: 1012, 1944). In the event that P. tabacina is eradicated or even greately reduced in Georgia by the introduction of resistant varieties so that serious outbreaks no longer occur in the southeastern States, the disease should no longer be a factor in the Tennessee-Kentucky area. This raises the question as to whether there will still be danger of infection of tobacco plant beds in Tennessee and Kentucky directly from Texas. If this seems likely, it may be necessary to initiate a breeding program for the development of resistant varieties of the types grown in these States. If infection is not likely to occur either from the Southeast or from the West, such a program should not be necessary. To try to get a preliminary answer to this question the writer, with the knowledge of Wolf's findings in Texas, visited that State between April 17 and 30, 1947, at a time when Kentucky and Tennessee plants were far enough along to become infected if inoculum were present.

In Texas, N. repanda was found in abundance from Hallettsville south, on U. S. 27, to Brownsville, along railroad embankments, roadsides, and near bridges across streams, a distance of about 300 miles. The groups of plants were scattered but could be found every few miles of the entire distance. In the Rio Grande Valley, N. repanda could be found in citrus groves nearly anywhere and along roadsides where there had been no irrigation. N. repanda seems to be more abundant where the natural soil has been disturbed, such as railroad and road fills, and it seemed to prefer the better soils. My general impression is that road building, cultivation, etc. have greatly increased the amount of N. repanda.

No sign of active blue mold was found on any plants examined, nor were any old sporophores found on the dead lower leaves. Wolf found the fungus fruiting abundantly everywhere in March. Evidently the gradual rise in temperature between early March and late April had brought about conditions unfavorable for sporulation, even though the season had been unusually cool. Doctor Godfrey was of the opinion that with a few days of moist, cool weather sporulation might be resumed. There had been no rainfall in the Rio Grande Valley between December 1946 and the latter part of April, and still sporulation had been abundant in March. In late April, day temperatures at Weslaco and Brownsville were about 80 to 85° F., and night temperatures about 70° F., which is usually considered too high for good sporulation. Another factor affecting sporulation is light intensity. During

the winter months light is greatly reduced, and conditions therefore are more favorable for sporulation than with greater light intensity in April and May. Furthermore, in late April the plants were old and the leaves thick and tough. They had been in bloom for more than a month, although there were some small plants still in the rosette stage. Therefore, it seems probable that long periods ideal for sporulation, such as would have to occur if spores in sufficient volume to be carried to Tennessee and Kentucky were to be produced, could hardly be expected to occur in southern Texas during April and early May even though short rainy periods might occur when the temperature might be low enough for sporulation. However, it would be highly desirable to have accurate reports on sporulation of P. tabacina on N. repanda over a period of years.

Considering the fact that during the long time that tobacco has been in Tennessee and Kentucky, blue mold was never found in plant beds until 1936, when the obvious explanation seemed to be that it had come from the Southeast, it is probable that if P. tabacina is eradicated or greatly reduced in Georgia as a result of the introduction of resistant varieties it will disappear from the Tennessee-Kentucky area as it did during the 1938-1944 period and infection will not be reintroduced from Texas. Therefore, it seems safe to conclude that if satisfactory resistant flue-cured varieties can be developed for the southeastern States it will not be necessary to develop resistant varieties of the types grown in Tennessee and Kentucky.

The Perique area of Louisiana was visited en route. Perique is limited to a small area extending along the north bank of the Mississippi for about 15 miles west of Lutcher and north from the river to a depth of about 3 miles. The land is flat, with deep drainage ditches through it. The rainfall is high in winter, and some damage from damping-off occurs in the seed beds, but growers reported that later there is practically no disease in the beds. Although weather conditions would seem to be ideal for blue mold, the tobacco growers contacted did not recognize the symptoms of blue mold at all and beds showed no signs of the disease. While the disease was reported as being present in the Perique beds in 1931, it seems to have disappeared completely. There is no likelihood that it will ever become a factor in the Perique area so long as the growers continue their present practice of destroying old plant beds and using new sites each year, thus eliminating any possibility of carry-over.

Wildfire [Pseudomonas tabacum] and black shank [Phytophthora nicotianae] appear, from descriptions given by growers, to be serious field diseases. No mosaic [virus] was seen in either pulled-over plant beds or field-set plants.

KENTUCKY AGRICULTURAL EXPERIMENT STATION

SURVEY FOR VERTICILLIUM WILT OF COTTON IN MESILLA VALLEY, NEW MEXICO

P. J. Leyendecker, Glen Staten, Marvin Hoover, L. R. Lytton, J. T. Stovall, A. R. Leding

In general Verticillium wilt appeared late in most of the fields surveyed and for that reason damage to plants and reduction in yield were less than in some seasons. Occasional fields had only a few diseased plants--in one case only 1 plant, in another 3 plants. Altogether, the damage resulting from the disease this year did not appear to be so serious as was indicated by a similar survey made in 1944, but it was somewhat more widely distributed, there being only about 12 percent of wilt free fields this year as compared with 25.3 percent in 1944. The percentage of fields with very light infections, where damage was negligible, was higher this year, when about 37 percent of the fields lay in this classification as against 24.2 percent in 1944. Of fields which were classified as having light infections, in which damage was nominal, there were 24 percent in 1944 and 21 percent this year. Moderately infected fields, where damage was estimated at from 5 to 10 percent, were about the same in the two years, the percentage having been 17 in 1944 and 13 this year. Fields of heavy infection accounted for about 10 percent of the total in 1944 and nearly 17 percent this year. Damage in such fields was estimated as from 10 to 20 percent, with a few fields perhaps, running higher. In 1944, however, the damage in most of the fields which were placed in this class was probably more serious than this year.

As in 1944, fields with light or no infections were found to occur more frequently in the area beginning a few miles north of Las Cruces where lighter type soils of lower productivity predominate and also toward the south end of Dona Ana County near the Texas state line. Fields with moderate to heavy infections were found scattered throughout the central part of the valley. In no case this year did it appear that yields were reduced as seriously as in 1944, when in a few cases reductions were estimated as from 40 to 50 percent.

Table 1. Verticillium wilt survey of 84 fields from approximately 10 miles north of Las Cruces to area south of La Union, New Mexico, October 2, 1947.

		Percent of total	Estimated damage to crop - %	Percent of total in 1944
Number of fields free of wilt	10	11.9	None	25.3
Number of fields with very light infection	31	36.9	0-2	24.2
Number of fields with light infection	18	21.4	3-4	24.2
Number of fields with moderate infection	11	13.1	5-10	16.9
Number of fields with heavy infection	14	16.7	10-20 or more	9.6

Total number of fields infected: 74, or 88.1 percent.

Number of fields containing spots where plants were killed by or without bolls as result of disease: 8, or 9.5 percent.

The survey this year encountered the complication that both the old and more susceptible strain of Acala 1517 and the new wilt resistant Acala 1517 W were planted. In the time available during the survey it was not practicable in most cases to determine which strain occupied a given field and the extent of the disease and the amount of damage resulting was very probably affected by this factor.

DIVISION OF COTTON AND OTHER FIBER CROPS AND DISEASES

DESTRUCTION OF SEEDLING CRATAEGUS MOLLIS BY GYMNOSPORANGIUM GLOBOSUM IN IOWA

Roy A. Young and George L. McNew

The writers' attention was called to the severe loss in a stand of hawthorn seedlings (Crataegus mollis (T.&G.) Scheele) growing at the State Forest Nursery at Ames, Iowa, in 1947. The plots had been seeded directly and the initial stand was about 18 plants per linear foot of row according to counts made by the nursery foreman in late spring. Counts made on October 21 showed that only 2 plants per foot had survived the summer.

Of the surviving plants 13 percent had swollen stems and were girdled so severely that there was little chance of recovery. Girdling was observed to occur most frequently slightly above the groundline. Examination of the swollen tissue and girdled area showed numerous aeci of Gymnosporangium globosum Farl. The long tubular peridia and orange-brown aeciospores 18x22 μ, leave little doubt as to the identity of the species of rust.

An abundant source of inoculum was present in two rows of red cedars (Juniperus virginiana L.) used as a windbreak on the tier of nursery blocks immediately to the east of the Crataegus. The cedars were planted in two solid rows, about 100 yards long, extending eastward from points north and south of the Crataegus block. They were at distances of approximately 40 to 140 and 75 to 175 yards. These cedars were heavily infected with G. globosum and G. juniperi-virginianae. Exhausted galls from the 1947 crop as well as numerous new galls were present.

Records were taken of the number of healthy, infected and dead Cra-

taegus plants in 10 feet of row. Four counts were made at intervals staggered across successive sections 40 or 80 feet long. The results are summarized in Table 1.

Table 1. Severity of injury at different distances from the alternate host.

Distance from nearest cedar (feet)	No. plants present[a]	Severity of infection[b]			Total percentage infection
		Moderate	Severe	Dead	
120 - 160	56	19.6	9.0	17.8	46.4
160 - 200	77	11.7	15.6	22.0	49.3
200 - 240	120	10.8	20.0	17.5	48.3
240 - 280	90	8.8	13.3	13.3	35.4
280 - 360	93	6.6	12.9	7.6	27.1
360 - 440	88	1.1	11.3	9.2	21.6
440 - 520	125	9.6	12.8	7.2	29.6

[a] Total in 40 feet of row.
[b] Moderate - aecia on leaves; severe - plants alive, aecia on stems, stems girdled; dead - dead plants with aecia on girdled stems.

These data show that infection and destruction of plants was most severe in the area nearest to the cedar trees. The low total plant count and severe infection percentage in the first plot is believed to be due to early killing of Crataegus by stem infection. Many dead plants were observed which were too badly deteriorated to be certain of the cause of death. Only those definitely showing aecia on the stems were counted. With the exception of the first and last blocks the percentage of infection decreased as the distance from the source of inoculum increased. Throughout the plot an average of 37 percent of the plants had been affected. It is almost certain that many more of the plants that had died earlier in the season were infected by G. globosum. It is not fair to assume, however, that rust attack on the stem of the seedlings was responsible for all of the 88 percent loss in stand. Damping off by soil-inhabiting fungi and drought injury probably contributed to the loss.

Weather conditions in Iowa during the spring of 1947 were especially favorable for the infection of Crataegus by G. globosum. More than .01 inch precipitation was recorded at Ames on 42 of the 91 days in April, May and June. Rainfall for the three month period totalled 23.32 inches, an increase of 11.96 inches over the normal. Only 25 days during the three month period were recorded as clear. Temperatures lower than average prevailed through the month of June; so conditions were ideal for the dissemination and germination of sporidia over a long period of time.

Although this destruction of Crataegus by infection of the stems is rather unusual it is not an unexpected role for G. globosum. According to MacLachlan (Jour. Arnold Arboretum 17 (1): 1-24. 1936.) G. globosum will rarely attack the stems of Crataegus and is restricted to the current seasons growth. G. juniperi-virginianae does not attack apple twigs to an appreciable extent but Bliss (Iowa Agr. Expt. Sta. Res. Bul. 166. 1933.) observed severe injury on twigs of the highly susceptible Bechtel flowering crab. The young seedlings of Crataegus mollis apparently are invaded even more readily with severe losses resulting. Undoubtedly this same injury occurs in native seedlings of Crataegus and may be a limiting factor in its establishment in mixed stands with redcedar.

IOWA STATE COLLEGE, AMES

ANTHRACNOSE OF BLUE LUPINE IS SEED BORNE

Phares Decker

Anthracnose of blue lupine (Lupinus angustifolius L.) caused by Glomerella cingulata (Stonem.) Spauld. and v. Schrenk. (Weimer, Phytopathology 33: 249-252. 1943) was prevalent in some lupine fields at harvest in southern Alabama and Georgia and in northwest Florida in 1947. (Wilson, P.D.R. 31: 270-271. 1947).

Seed was harvested from some of the diseased fields and certain seed lots contained 10 percent infected seed after drying and cleaning. Samples of seed were collected in September and October 1947. The infected seed were separated from the sound seed and plantings of these infected seed were made in the greenhouse on September 29 and October 6. Germination was approximately 40 percent, producing an average of 30 percent normal plants. Ten percent of the seedlings failed to produce normal plants because the growing point was injured and no true leaves developed. On October 21, typical anthracnose lesions were found developing on the main stem and leaves. Numerous acervuli filled with spores appeared on the plants in two days.

This proves that anthracnose infected seed can serve as a source of inoculum in the fall lupine plantings.

FLORIDA AGRICULTURAL EXPERIMENT STATION, GAINESVILLE

BENZENE HEXACHLORIDE FAILS TO CONTROL THE ROOTKNOT NEMATODE

C. N. Clayton and D. E. Ellis

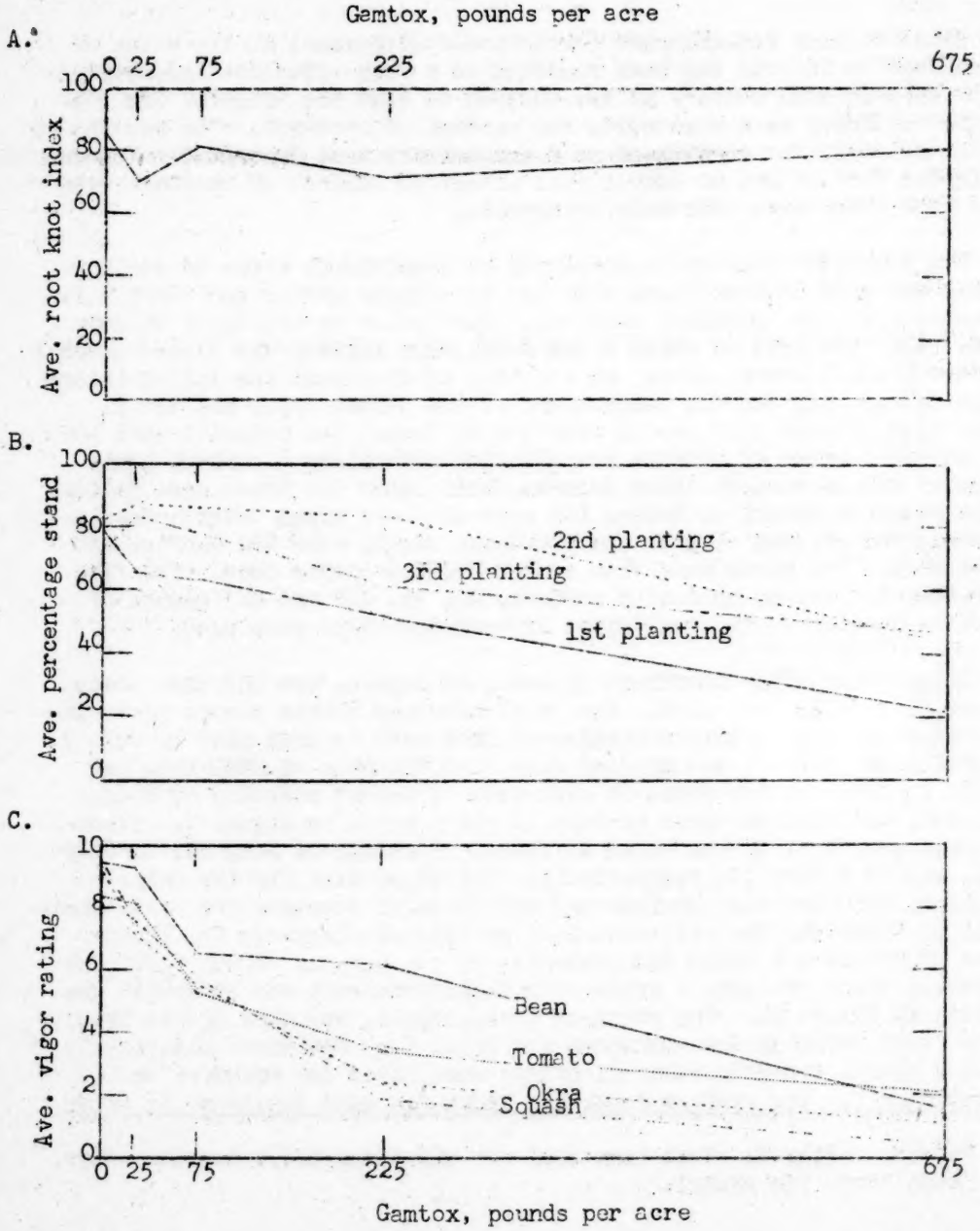
Since benzene hexachloride (hexachlorocyclohexane) at low rates of application in soil has been reported as a very effective insecticide for certain soil pests[1], it was decided to test the material for possible efficacy as a nematocide for control of rootknot. The results of its use under the conditions of a preliminary test described below indicated that it had no appreciable effect on control of rootknot even at rates that were extremely phytotoxic.

The test with benzene hexachloride at 4 different rates of application was made on sandy loam soil low in organic matter and heavily infested with the rootknot nematode. Just prior to treatment on June 28, 1947, the soil on which a few weeds were growing was disked several times about 6 inches deep. At the time of treatment the soil moisture was fairly high and the temperature at the 3-inch depth was 85° F. The size of each plot was an area 9 x 12 feet. The material used was a wettable grade of benzene hexachloride containing 6 percent gamma isomer and 44 percent other isomers, sold under the trade name Gamtox. The required amount of Gamtox for each plot was mixed with approximately two gallons of soil and broadcast evenly over the surface of the plot. The plots were then disked about 6 inches deep. The five treatments were an untreated control, 25, 75, 225 and 675 pounds of Gamtox per acre. Two replicates of each treatment were used.

Immediately after treatment 25 bean, 25 squash, and 100 okra seeds were planted in each plot. Five well-hardened tomato plants grown in nematode-free soil were transplanted from pots to each plot on July 7. Fertilizer (5-10-5) was applied July 7 at the rate of 2000 lbs. per acre in bands on the sides of each row. A second planting of bean, squash, and okra was made on July 12 and a third on August 9. Stand counts were made on the three different plantings on July 12, on July 22, and on August 18, respectively. The stand data for the okra, squash, and bean were similar and are shown as averages for each planting in Figure 1B. The relative vigor or size of plants in the first two plantings was rated independently by two persons on July 23. The average vigor ratings, a scale from 0-10 (0=poorest and 10=best), are shown in Figure 1C. The roots of bean, squash, and okra plants from the first planting were examined and rated for rootknot on August 7, while plants from the other plantings were rated for rootknot on September 7. The average rootknot index for each treatment is shown

[1] Kulash, Walter M. Soil treatment for wireworms and cutworms. Jour. Econ. Ent. (In press).

Figure 1. Effect of soil treatment with Gamtox at four rates of application upon incidence of root knot, percentage stand, and vigor of bean, tomato, okra, and squash plants.



in Figure 1A.

The data in Figure 1 show that Gamtox, especially at the higher rates of application, reduced emergence of seedlings, caused extreme stunting of those plants that did emerge, and failed to reduce the incidence of rootknot. Almost all plants on plots that were treated at the 675-pound rate died soon after emergence. The root systems of the surviving plants were very small and affected by rootknot. Plants on the untreated plots averaged somewhat larger than on those treated with the 25-pound rate and much larger than those on plots that received the 75-, 225-, or 675-pound rate. The material in the soil was quite toxic to plants for at least 2 months. These data are from only one set of conditions, and one formulation of benzene hexachloride. Different results might be obtained under other conditions. However, in the test reported here benzene hexachloride, even at phytotoxic rates, failed to reduce appreciably the incidence of rootknot.

PLANT PATHOLOGY SECTION, NORTH CAROLINA AGRICULTURAL EXPERIMENT STATION, RALEIGH

A CORRECTION

Dr. James Johnson calls attention to an error in his article "Tobbaco Blue Mold in Wisconsin" in the Plant Disease Reporter, Volume 31, No. 11, page 419. In line 6, the fourth word should be "an" instead of "no". In other words, it should read: "The writer had an opportunity to see the disease at that time."

CHECK LIST REVISION

Freeman Weiss

AMSONIA (APOCYNACEAE)

AMSONIA CILIATA Walt. (1) and A. TABERNAEMONTANA Walt. (2). Perennial herbs of woodlands, (1) in the Southeastern and Southern States, (2) ranging farther north; grown for ornament.

Coleosporium apocynaceum Cke. (II,III), rust. Fla., Ga., S.Car. (1); Ala., Ga., S.Car. (2). O and I on Pinus spp.
Mycosphaerella sp. Ga. (2)
Puccinia seymouriana Arth. (O,I), rust. Mo. (2) II and III on Spartina spp.

APOCYNUM (APOCYNACEAE)

APOCYNUM ANDROSAEMIFOLIUM L., SPREADING DOGBANE (1); A. CANNABINUM L., INDIAN HEMP (2); A. SIBIRICUM Jacq. (3). Perennial herbs of fields and woodland borders, (1) ranging throughout the U.S., (2) central and eastern, (3) northern and western; the roots of (2) yield medicinal compounds, (1) is a valuable honey plant.

(Aecidium apocyni Schw.): Puccinia smilacis.
Cercospora apocyni Ell. & Kell., leaf spot. Ind., Kans., Mich., Nebr., Va., Wis. (1); Ill., Kans., Mich., Mont., Wis. (2)
Cylindrosporium apocyni Ell. & Ev., leaf spot. Del., Wis. (1); Va. (2). See also Septoria littorea.
Didymosphaeria brunneola Niessl, on stems. N.Dak. (3)
Gloeosporium apocyni (Pk.) Ell. & Ev. See Stagonospora a. Ind., N.Y. (2), Iowa (1)
Laestadia apocyni Ell. & Ev., on stems. N.Dak. (3)
Phyllosticta apocyni Trel. (? P. asclepiadeum Desm.), leaf spot. Iowa, N.Y., Ore., Pa., Wis. (1); Miss., N.J., N.Y., Wis. (2)
Puccinia seymouriana Arth. (O,I), rust. Ind., Kans., N.J., N.Y. (2); Ill., Kans., Nebr., Okla., S.Dak. (3). II and III on Spartina spp.
P. smilacis Schw. (O, I), rust. Tenn. (1,2); as Aecidium apocyni Schw. in Del., Ill., Kans., Md., N.Car., Va., Wis. (1,2). II and III on Smilax spp.
(Septogloeum apocyni Pk.): Stagonospora a.
Septoria littorea Sacc., leaf spot. Mich. (1); Kans., Nebr., N. Dak. (2); Ohio (2,3). May include Cylindrosporium apocyni.
Stagonospora apocyni (Pk.) J. J. Davis, leaf spot. Ill., Iowa, N.Y., Wis. (1); Ind., N.Y. (2)

VINCA (APOCYNACEAE)

VINCA MAJOR L. (1) and V. MINOR L. (2), PERIWINKLE, GROUND-MYRTLE. Trailing evergreen herbs of Europe, grown for ornament in baskets and beds and extensively in the open for ground cover, (2) widely naturalized in the Eastern and Southern States. V. ROSEA L., MADAGASCAR PERIWINKLE (3), perennial herb or shrub grown for ornament, often as an annual, in greenhouses and as a house plant.

Alternaria sp. (? A. tenuis Nees ex Wiltshire), leaf spot, stem rot (? secondary). Pa., Tex. (2)

Botrytis cinerea Pers. ex Fr., gray-mold blight. Conn., Wash. (2)

Cladosporium herbarum Lk. ex Fr., leaf mold. Md., N. Y., Pa.

Coleosporium apocynaceaum Cke. (II. III), rust. P. R. (3). O and I on Pinus spp.

Colletotrichum sp., leaf spot. Fla. (2)

Cuscuta indecora Choisy, dodder. Tex. (3). C. campestris Yuncker is used on this host in experimental transmission of viruses.

Diplodia vincae Sacc. & Wint., on stems and leaves. Ohio (2)

Heterodera marioni (Cornu) Goodey, rootknot. Ohio (1); Kans., Ohio (3)

Macrophoma vincae (Curr.) Berl. & Vogl., leaf spot, dieback. Ill. (1), N. Y. (2)

Phomopsis lirella (Desm.) Grove, canker, dieback. Md., N. J., Ohio, Pa., Va., ? Conn. (2). Conidial stage of Diaporthe vincae Cke. (= D. eumorpha (Dur. & Mont.) Naire)?

Phyllosticta spp., leaf spot. Ga., N. J. (1); Conn. (2). P. minor Ell. & Ev. is reported on (2) in Md., N. J., N. Y., Va.; P. vincae-majoris Allesch. in Calif.

Physalospora obtusa (Schw.) Cke., on stems. N. Y., Va. (2). Some reports of Sphaeropsis vincae may belong here.

Phytophthora colocasiae Rac., leaf rot. Hawaii (3)

Puccinia vincae (DC.) Berk. (O,I,II,III), rust. Mass., Mich., N. Y., Wash. (1)

Rhizoctonia solani Kuehn, root and stem rot. Ill. (1); Md., N. J., Va. (2)

Septoria vincae Desm., leaf spot. N. J. (1); N. Y. (2)

(Sphaeropsis vincae Curr.): Macrophoma v.

(S. vincae Sacc. & Wint.): Diplodia v. See also Physalospora obtusa

Volutella vincae Fairm., on leaves. N. Y., Pa. (2)

Yellows -- virus (Chlorogenus callistephi Holmes, Callistephus virus 1 K.M.Sm.). Kans. (1), ? Tex. (3). The following viruses have been experimentally communicated to (3): Aureogenus magnivena Black, Chlorogenus eutetticola Holmes, C. santali Holmes, C. vaccinii Holmes, and Marmor lacerans Holmes

ACORUS (ARACEAE)

ACORUS CALAMUS L., SWEETFLAG. Perennial herb of marshes in the Eastern and Central States southward, a wildlife food plant and sometimes grown in bog gardens; A. gramineus Soland, of eastern Asia, also is cultivated.

Cylindrosporium acori Pk., leaf spot. Conn., Kans.
Ramularia aromatica (Sacc.) Hoehn., leaf spot. Conn. to Md., Ind., and Wis.
Septocylindrium sp. (? Ramularia), leaf spot. N. Y.
Sphaerulina acori Dearn. & House, on fading leaves. N. Y.
Uromyces pyriformis Cke. (II,III), rust. Me. to Va., Miss., Ill. and Minn. O and I unknown

ANTHURIUM (ARACEAE)

ANTHURIUM spp. Perennial herbs of tropical America; some kinds are commonly grown in greenhouses for ornament, but the species to which the following records pertain are of no present economic importance.

Mycosphaerella anthurii Miles, leaf spot. P. R.
Phyllachora engleri Speg., black spot. P. R.
Uredo anthunii (Hariot) Sacc. (II), rust. P. R.

ARISAEMA (ARACEAE)

ARISAEMA DRACONTIUM (L.) Schott., DRAGONROOT (1), and A. TRIPHYLLUM (L.) Schott, (also A. ATRORUBENS (Ait.) Blume), JACK-IN-THE-PULPIT, INDIAN TURNIP (2). Perennial herbs of moist woodlands, mostly in the Eastern and North Central States and southward; sometimes grown in wild gardens, (2) is a wildlife food plant.

Botrytis streptothrix (Cke. & Ell.) Sacc., leaf and stalk blight. Ill., Iowa, Md., N. Y., Pa., Wis. The fungus on Arisaema is commonly thus identified but it has recently been made the type of a new genus of Ascomycetes, Streptotinia arisaemae Whet.
Cladosporium sp., leaf spot. Va. (2)
Uromyces caladii (Schw.) Farl. (O,I,II,III), rust. N. Y. to Fla., Tex. and Nebr. (1); Me. to Fla., Miss., and N. Dak.; also Pacific Northwest (2).
Volutella sp., leaf spot. Ind. Ramularia arisaematis Ell. & Dearn. may be the same.

CALADIUM (ARACEAE)

CALADIUM BICOLOR Vent. (1); other spp. (2). Tropical American herbs grown for ornament in gardens in the far South, in greenhouses and as house plants in the North.

Cercospora caladii Cke., leaf spot. P. R. (1)
Erwinia carotovora (L.R.Jones) Holland, bacterial soft rot. Fla. (1, 2)
Gloeosporium sp. (? G. thuemenii Sacc.), leaf spot. Fla.
Helminthosporium caladii F.L.Stevens, leaf spot. P. R. (1)
Heterodera marioni (Cornu) Goodey, root knot. Fla., Miss.
Sclerotium rolfsii Sacc., southern blight. Fla., P. R. (1, 2)

CALLA (ARACEAE)

CALLA PALUSTRIS L., WILD CALLA. Perennial herb of bogs in the Northeastern and Lakes States; a wildlife food plant, sometimes grown in wild gardens.

Cercospora callae Pk. & G.W.Clint., leaf spot. Mass., N. Y., Wis.
Marssonina (Marssonia) callae Dearn. & House, leaf spot. N. Y.

COLOCASIA (ARACEAE)

COLOCASIA ANTIQUORUM Schott, ELEPHANT'S-EAR (1), and C. ESCULENTA (L.) Schott, TARO, DASHEEN (2). Coarse herbs of tropical Asia grown for ornament and, especially (2), for edible tubers, an important food plant in the Hawaiian and other Pacific islands.

Cercospora sp. (? C. caladii Cke.), leaf spot. Hawaii (2)
Cladosporium sp., leaf spot. Hawaii (2)
Diplodia sp., black rot (of tubers). Fla., S. Car. (2). Probably D. tubericola (Ell. & Ev.) Taub. (conidial stage of Physalospora rhodina (Berk. & Curt.) Cke.), or this species under other names.
Erwinia carotovora (L.R.Jones) Holland and E. aroideae (Town.) Holland, bacterial soft rot. Fla., P. R. (2)
Fusarium solani (Mart.) App. & Wr., powdery gray rot. Fla., Hawaii (2)
Gloeosporium sp. (? G. thuemenii Sacc.), leaf spot. Guam (2)
Helminthosporium caladii F.L.Stevens, leaf spot. P. R. (2)
Heterodera marioni (Cornu) Goodey, root knot. Fla., Hawaii (2)
Phyllosticta colocasiicola Hoehn., leaf spot. P. R. (2)
P. colocasiophila Weedon. Hawaii, Guam
Phytophthora colocasiae Rac., leaf blight. Hawaii (2)
Pythium debaryanum Hesse, root rot. Calif., Hawaii (2)

COLOCASIA cont.

Sclerotium rolfsii Sacc., southern blight, stem rot. Fla. (1,2), N. Y. (1), Hawaii (2)

DIEFFENBACHIA (ARACEAE)

DIEFFENBACHIA PICTA Schott (1), and D. SEGUINE (Jacq.) Schott. (2) Perennial, somewhat woody herbs of tropical America, grown in gardens there and indoors as pot plants for foliage in the North.

Cephalosporium dieffenbachiae Linn, leaf spot. N.Y. (1)
Colletotrichum (Gloeosporium) sp., anthracnose. See Glomerella.
Glomerella cincta (Ston.) Spauld. & Schrenk. (? G. cingulata (Ston.) Spauld & Schrenk.), leaf spot. N.J. (1). Reported in conidial stage as Colletotrichum or Gloeosporium sp.
Irenina aracearum F.L.Stevens, black mildew. Canal Zone.
Meliola dieffenbachiae F.L.Stevens, black mildew. P.R. (2)
Phyllosticta colocasiae Hoehn., leaf spot. P.R. (2)
Xanthomonas dieffenbachiae (McCul. & Pirone) Dowson, bacterial leaf spot. N.J.

HOMALOMENA (ARACEAE)

HOMALOMENA WALLISII (Mast.) Regel. Tropical American herb grown as a pot plant for ornamental foliage.

Glomerella cincta (Ston.) Spauld. & Schrenk, leaf spot. N.J.

MONSTERA (ARACEAE)

MONSTERA DELICIOSA Liebm., CERIMAN. Woody climber of Central America, grown for novelty in greenhouses and sometimes as a house plant; the fruit is edible.

Macrophoma philodendri Pk., leaf spot. Fla., Mich.

ORONTIUM (ARACEAE)

ORONTIUM AQUATICUM L., GOLDEN-CLUB. Aquatic perennial of the Eastern and Gulf States, a wildlife food plant, sometimes grown in wild gardens.

Botrytis streptothrix (Cke. & Ell.) Sacc., leaf blight. N.J.
Mycosphaerella sp., leaf spot. N.J.
Phyllosticta orontii Ell. & Martin, leaf spot. N.J., Tex.
Physalospora orontii Ell. & Ev., on leaves. N.J.

ORONTIUM cont.
Ramularia orontii Ell. & Martin, leaf spot. N.J.
Volutella diaphana Ell., leaf spot. N.J.

PELTANDRA (ARACEAE)

PELTANDRA GLAUCA (Ell.) Feay (1) and P. VIRGINICA (L.) Kunth. (2), ARROW-ARUM. Perennial herbs of bogs, (1) in the Southeastern and Gulf States, (2) ranging northward to N.Y. and Mich.; grown in wild gardens and furnish food for wildlife.

Cercospora callae Pk. & G.W.Clint. (C. pachyspora Ell. & Ev.), leaf spot. Ala. (1); Del., Fla., N.Y. (2)
Colletotrichum sp., leaf spot. Ala. (1)
Gloeosporium paludosum Ell. & Gall., leaf spot. Del., Ind., Mass., N.Y. (2)
? Laestadia ari Ell. & Ev., on leaves. Ala. (1)
Pestalotia aquatica Ell. & Ev., secondary leaf spot. N.J., N.Y. (2)
Ramularia sp., leaf spot. Mich. (2)
Sclerotium caladii Schw. ex Fr., on leaves. Md., Mass., N.Car.
Uromyces caladii (Schw.) Farl. (0,I,II,III), rust. Ga., N.Car. (1); Mass. to Fla., also Ill., Ind., Iowa. (2)

PHILODENDRON (ARACEAE)

PHILODENDRON spp. Numerous woody climbers of tropical America, a number of which are cultivated as foliage plants in greenhouses and general indoor use, also in the open in the far South.

Colletotrichum philodendri P.Henn., leaf spot. N.J., Canal Zone, P.R.
Diplodia theobromae (Pat.) Nowell, on stems. Canal Zone.
Meliola philodendri F.L.Stevens, black mildew. P.R.
Scolecopeltella microcarpa Speg., on leaves. P.R.
Trichopeltis reptans (Berk. & Curt.) Speg., on leaves. P.R.

SYMPLOCARPUS (ARACEAE)

SYMPLOCARPUS FOETIDUS (L.) Nutt., SKUNK-CABBAGE. Perennial herb of swampy ground in the Northeastern and North Central States; a wildlife food plant, sometimes grown in wild gardens.

Botrytis sp. (? B. streptothrix (Cke. & Ell.) Sacc.), leaf blight. Conn., Ill., N.J., N.Y.
Cercospora symplocarpi Pk., leaf spot. Mass. to Va., Ind. and Wis.

SYMPLOCARPUS cont.

Septoria spiculosa Ell. & Holw., leaf spot. Md., N.Y., Pa., Wis.

SYNGONIUM (ARACEAE)

SYNGONIUM PODOPHYLLUM Schott. Mexican creeping vine, grown in greenhouses for ornament.

Cephalosporium cinnamomeum Linn, leafspot. N.Y.

XANTHOSOMA (ARACEAE)

XANTHOSOMA SAGITTAEFOLIUM (L.) Schott, YAUTIA (1); X. VIOLACEUM Schott (2), and other spp. (3), MALANGA. Large herbs of tropical America bearing edible tubers, also grown in greenhouses for foliage.

Colletotrichum (Gloeosporium) sp., leaf spot. P.R. (1,2)
Armillaria mellea Vahl ex Fr., root rot. Calif.
Erwinia carotovora (L.R.Jones) Holland, bacterial soft rot. P.R. (1)
Fusarium solani (Mart.) App. & Wr., powdery grayrot. Fla. (1)
Phyllosticta colocasiae Hoehn., leaf spot. P.R.
Sclerotium rolfsii Sacc., southern blight. P.R. (1,2)
Vasculomyces xanthosomae Ashby, ? mal de la yautia (root disease). P.R. (1)

Mosaic -- unidentified virus. P.R. (1)

ZANTEDESCHIA (ARACEAE)

ZANTEDESCHIA AETHIOPICA Spreng., CALLA. Robust herb of S.Africa, widely grown in greenhouses for cut flowers and as pot plants; field culture for rhizomes ("bulbs") in Calif., Fla., Ore., Tex.

Alternaria sp. (? A. tenuis nees ex Cda.) secondary leaf spot. Calif., N.J., N.Y., Ore.
Armillaria mellea Vahl ex Fr., root rot. Calif.
Botrytis sp. (?B.cinerea Pers. ex Fr.), gray mold rot, N.J., Alaska
Cercospora richardiaecola Atk., leaf spot. Ala., Miss.
Erwinia aroideae (Town.) Holland and E. carotovora (L.R.Jones) Holland, bacterial soft rot (of rhizomes), leafstalk rot. General.
Gloeosporium callae Oud., leaf spot. Wash.

ZANTEDESCHIA cont.

Heterodera marioni (Cornu) Goodey, root knot. ? Calif., Fla.
Phoma sp., dry rot (of rhizomes) Calif., Ore.
Phyllosticta richardiae Hals., leaf spot. Calif., Fla., Mass., N.J., N.Y., Ore., Hawaii
Phytophthora erythroseptica Pethyb., rhizome rot. Calif.
P. richardiae Buis., root rot. Calif., Fla., Ill., Mass., N.J., N.Y., Ohio, Ore., Pa., Wash.
Sclerotium rolfsii Sacc., southern blight. Calif., Fla., Ore.

Spotted wilt -- virus (Lethum australiense Holmes, Lycopersicon virus 3 K.M.Sm.). Calif., Ind., Md., N.Y., Ore., Tex., Wash.

ZANTEDESCHIA ELLIOTTIANA Engler, GOLDEN CALLA (1) and Z. REHMANNII Engler, PINK CALLA (2). Perennial herbs of S. Africa, grown under glass for cut flowers and as house plants; field culture chiefly in Calif., Fla., and Tex.

Erwinia aroideae (Town.) Holland, bacterial soft rot. Calif., Fla. (1)
Rhizoctonia solani Kuehn, root rot, seed rot. Calif. (1)
Phytophthora erythroseptica Pethyb., leaf blight. Calif. (2)

Spotted wilt -- virus (Lethum australiense Holmes, Lycopersicon virus 3 K.M.Sm.). Calif., Md., N.Y. (1); Tex. (2)

ACANTHOPANAX (ARALIACEAE)

ACANTHOPANAX SIEBOLDIANUS Mak. Shrub of Japan, grown for ornament, Zone IV.

Alternaria sp. (? A. panax Whet.), leaf spot. Mo.
Phymatotrichum omnivorum (Shear) Dug., root rot. Tex.

ARALIA (ARALIACEAE)

ARALIA CORDATA Thunb., UDO. Robust perennial herb of Japan, sometimes grown for edible shoots.

Alternaria sp. (? A. panax Whet.), blight. Del., ? N.J.
Sclerotinia sclerotiorum (Lib.) DBy., stem rot. Md.
Verticillium albo-atrum Reinke& Berth., wilt. Md., ? Pa.

ARALIA HISPIDA Vent., BRISTLY SARSAPARILLA (1); A. NUDICAULIS L., WILD S. (2); and A. RACEMOSA L., AMERICAN SPIKENARD (3). Perennial herbs of woodlands, mostly in the Northeastern and North Central States; collected or grown for pharmaceutical uses and sometimes planted for ornament; all furnish food for wildlife.

ARALIA cont.

Alternaria sp., leaf spot. N.Y. (2,3)
Ascochyta marginata J.J.Davis, leaf spot. Wis. (2)
Cercospora leptosperma Pk., leaf spot. Mich., Wis. (1); Iowa, Mich., N.Y., Wis. (2)
Nyssopsora clavellosa (Berk.) Arth. (III), rust. Minn., N.Y., Tex. (1); Me. to Pa., Minn., and Ore., also Calif. (2); Ore. (3)
Phyllactinia corylea Pers. ex Karst., powdery mildew. Mich., Nebr. (2)
Phyllosticta decidua Ell. & Kell., leaf spot. Wis. (3)
Ramularia repens Ell. & Ev., leaf spot. Wis. (2,3)
Sclerotium deciduum J.J.Davis, leaf spot. Wis. (2)
Septoria macrostoma Clements, on leaves. Colo. (2)
Verticillium dahliae Kleb. (? V. albo-atrum Reinke & Berth.), wilt. N.Y. (3)

ARALIA SPINOSA L., HERCULES-CLUB. Small tree of the Eastern and Central States and southward, a wildlife food plant and grown for ornament; hardiness Zone IV

Botryosphaeria ribis (Tode ex Fr.) Gross. & Dug., branch canker, dieback. Ga., Va., W.Va.
Cercospora atromaculans Ell. & Ev., leaf spot. La.
Diaporthe araliae Ell. & Ev., on branches. Ga., W.Va.
Haplosporella araliae Ell. & Ev., on branches. W.Va. Conidial stage of Physalospora obtusa (Schw.) Cke.?
Nectria cinnabarina Tode ex Fr., canker, dieback. Va., W.Va.
Phomopsis melaleuca (Berk. & Curt.) Grove, on twigs. Ala., W.Va.
Phyllosticta everhartii Sacc. & Syd., leaf spot. W.Va.
Polyporus tulipiferus (Schw.) Overh., sapwood rot. Md.
Sphaceloma araliae Jenkins, scab (on leaves). Md., Mo.
Stagonospora sp. W.Va.

HEDERA (ARALIACEAE)

HEDERA HELIX L., ENGLISH IVY. Woody evergreen vine or climbing shrub of Europe and s.w.Asia; widely cultivated in many horticultural forms for wall and ground cover, and as a house plant. Hardiness zone V.*

Amerosporium trichellum (Fr.) Lind (Colletotrichum trichellum (Fr.) Duke, Vermicularia trichella Fr.), anthracnose, leaf and stem spot. Mass. to S.Car., Tex. and Okla., Ore., Wash.

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* A revision of the previous treatment of this host in PDR 25: 261

HEDERA cont.

Colletotrichum gloeosporioides Penz. var. hederae Pass. and C. hedericola Laubert are probably synonyms.
Cladosporium brunneolum Sacc., leaf mold. Calif.
Colletotrichum trichellum. See Amerosporium t.
Cuscuta sp., dodder. Ariz., N.J.
Diplodia hederae Fckl., on dead stems. Conn., S.Car., Va.
Erysiphe cichoracearum DC., powdery mildew. Okla.
Glomerella cingulata (Ston.) Spauld. & Schrenk, leaf spot, dieback. Conn., Md., N.Y., Tex. Probably includes Gloeosporium hedericolum Maubl., reported in N.Y.
Phyllosticta concentrica Sacc., leaf spot. Mass. to Ala., Tex. and Nebr.; Calif., Wash.
P. hederae Sacc. & Roum., leaf spot. Del., N.Y.
P. hedericola Dur. & Mont., leaf spot. Calif., Conn., Miss., N.J., N.Y., Ore.
Phymatotrichum omnivorum (Shear) Dug., root rot. Tex.
Physalospora obtusa (Schw.) Cke., on dead stems. Md.
Ramularia hedericola Heald & Wolf, leaf spot. Tex.
Rhizoctonia solani Kuehn, root rot (seedlings). Conn.
Sphaceloma hederae Bitancourt & Jenkins, scab, spot anthracnose. Calif., N.Car., Va.
Sphaeropsis hederae Ell. & Ev., on stems. W.Va.
S. hedericola (Speg.) Sacc., on leaves. N.Y. Conidial stage of Physalospora obtusa?
Xanthomonas hederae (Arn.) Dowson, bacterial spot. Ga., Ill., Md., N.J., N.Y., Va., Wash.

OPLOPANAX (ARALIACEAE)

OPLOPANAX HORRIDUM (Small) Miq., DEVILS-CLUB. Large thorny shrub of the Pacific Coast from Calif. to Alaska, a wildlife food plant.

Botrytis cinerea Pers. ex Fr., gray-mold blight. Alaska
Cercospora daemonicola Sprague, leaf spot. Ore.

PANAX (ARALIACEAE)

PANAX QUINQUEFOLIUM L., AMERICAN GINSENG (1). Perennial herb of woodlands in the Northeastern and Central States, cultivated for the rhizomes which are used in medicine. P. TRIFOLIUM L., DWARF G. (2), is a woodland herb of similar range.

Alternaria panax Whet., Alternaria blight, root rot. General, especially in cultivated plantings, Me. to N.Car., Mo. and Minn. (1)
Armillaria mellea Vahl ex Fr., root rot. Wash. (1)
Botrytis cinerea Pers. ex Fr., gray-mold blight, stem rot, seed rot. N.Y. to N.Car. and Mich.; Wash. (1)
Colletotrichum dematium (Fr.) Grove, secondary leaf spot. N.Y. to N.Car., Mo. and Minn. (1)
Fusarium scirpi Lambotte & Fautr., and var. acuminatum (Ell. & Ev.) r., root rot, wilt. N.Y. to Ala.; Mo. and Wis.; Wash. (1)

PANAX cont.

Heterodera marioni (Cornu) Goodey, root knot. Conn., Mich., N.Y., Ohio, Pa., Wis. (1)

Phytophthora cactorum (Leb. & Cohn) Schroet., root and stem rot, downy mildew. Conn. to N.Car., Iowa, and Mich.; Wash. (1)

Puccinia araliae Ell. & Ev. (III)., rust. Mass., Pa. (2)

Pythium debaryanum Hesse, damping off. N.Y. (1)

Ramularia spp., "rust", root rot. Superficial discoloration of roots (rhizomes) ascribed to R. destructans Zinss. is reported in Mich., N.Y., Ore., Wash., Wis. (1); "disappearing root rot," ascribed to R. panacicola Zinss., is reported in N.Y. and Wis. (1). Both spp. appear to belong to Cylindrocarpon but these combinations have not been made.

Rhizoctonia solani Kuehn, damping off, root rot. Ark., Ind., Mich., N.J., N.Y., Wash. (1)

Sclerotinia sclerotiorum (Lib.) DBy., white rot (of rhizomes). Mich., N.Y., Ohio, Pa., Wis. (1)

S. smilacina Durand (S. panacis Rankin), black rot (of rhizomes). Mich., Minn., N.Y., Wis. (1)

Septoria sp., leaf spot. Minn. (1)

S. araliae Ell. & Ev., leaf spot. Wis. (2)

Thielaviopsis basicola (Berk. & Br.) Ferr., black root. Ill., Mich., N.J., N.Y., Ohio (1)

Verticillium albo-atrum Reinke & Berth., wilt. Ind., Ky., Mich., N.J., N.Y., Ohio, Pa., Tenn., Wis. (1)

Papery leaf -- physiological, ascribed to moisture deficiency and sunscald. Mich., Mo., N.J., N.Y., Pa. (1)

POLYSCIAS (ARALIACEAE)

POLYSCIAS FRUTICOSA (L.) Harms (1) and P. GUILFOYLEI Bailey (2). Shrubs of s. Asia and Pacific Islands, grown in greenhouses, also in the open in the far South for hedges.

Cephaleuros virescens O.Kunze, green scurf. P.R. (2)

Colletotrichum peregrinum Pass., Canal Zone (2)

Rosellinia bunodes (Berk. & Br.) Sacc., root rot. P.R. (1)

ARISTOLOCHIA (ARISTOLOCHIACEAE)

ARISTOLOCHIA CLEMATITIS L., BIRTHWORT (1); perennial herb of s. Europe, grown for ornament, naturalized N.Y. to Va. A. DURIOR Hill (A. sipho L'Her.), DUTCHMANS-PIPE (2); tall woody vine, native in the Eastern and Central States, grown for ornament and as a plant cover. A. SERPENTARIA L., VIRGINIA SNAKEROOT (3); perennial herb of woodlands in the

ARISTOLOCHIA cont.

Eastern and Central States and southward, sometimes grown in wild gardens.

Botrytis cinerea Pers. ex Fr., leaf spot. Conn., Md. (2)
Cercospora guttulata Ell. & Kell., leaf spot. W.Va. (2); Ill. (sp.)
C. serpentariae Ell. & Ev., leaf spot. Ala., Conn., Del. (3)
Diplodia radicicola Tassi (? Physalospora rhodina (Berk. & Curt.) Cke.), root rot. Va. (3)
Gloeosporium sp. (? Glomerella cingulata (Ston.) Spauld. & Schrenk), leaf spot. Mass. (2)
Hymenochaete tabacina (Sow. ex Fr.) Lév., on branches, ? sapwood rot. Calif. (sp.)
Ovularia aristolochiae Dearn., leaf spot. W.Va. (2)
Phyllosticta aristolochiae Tassi, leaf spot. N.J. (2)
Physalospora obtusa (Schw.) Cke., on stems. Ohio (1)
Sphaeropsis squieriae G.W.Clint., on stems. N.Y. (sp.)

ASARUM (ARISTOLOCHIACEAE)

ASARUM CANADENSE L., WILD GINGER (1); A. CAUDATUM Lindl. (2), A. VIRGINICUM L. (3). Perennial herbs of woodlands, (1) in the Eastern and Central States, (2) in the far West, (3) in the Southeast; sometimes grown in wild gardens.

Ascochyta versicolor Bub., leaf spot. Ida. (2)
Laestadia asarifolia (Cke.) Sacc., leaf spot. S.Car. (sp.)
Mycosphaerella sp. (Sphaerella concentrica (Berk. & Curt.) Cke., on leaves. Ala. (3)
Puccinia asarina G. Kunze (III), rust. Calif., Ida., Ore., Wash. (2)
Sclerotinia sclerotiorum (Lib.) DBy., rhizome rot. N.Y. (1)
Synchytrium asari Arth. & Holw., on leaves. Minn., Wis. (1); Calif. (sp.)

ASCLEPIODORA (ASCLEPIADACEAE)

ASCLEPIODORA DECUMBENS (Nutt.) A. Gray (1) and A. VIRIDIS (Walt.) A. Gray (2). Perennial herbs of dry plains, chiefly in the South Central and Southwestern States, (2) also Southeastern; may be grown in wild gardens.

Alternaria fasciculata (Cke. & Ell.) L.R.Jones & Grout, leaf spot (? secondary). Okla. (2)
Cercospora asclepiadorae Ell. & Kell., leaf spot. Kans. (2)

ASCLEPIODORA cont.

Phyllosticta tuberosa Ell. & Martin, leaf spot. Okla. (1)
Puccinia bartholomaei Diet. (O,I), rust. Okla., Tex. (1); Kans., Okla. (2). II and III on Bouteloua spp.
Uromyces asclepiadis (Schw.) Cke. (II,III), rust. N.Mex., Tex. (1); Kans. (2)

ASCLEPIAS (ASCLEPIADACEAE)

ASCLEPIAS spp. MILKWEED. Perennial herbs usually in dry open ground, different spp. ranging nearly throughout the U.S. Some spp. especially A. TUBEROSA L., BUTTERFLY-WEED (1), sometimes A. SPECIOSA Torr. (2), are grown for ornament; several, especially A. GALIOIDES H.B.K. (3), are important stock-poisoning plants of the Western Plains; others, as A. INCARNATA L. (4) and A. SYRIACA (5), and spp. (6), are utilized by wildlife; (1) and (5) are important honey plants.

Alternaria sp., leaf spot. Vt. (4); Mich., W.Va. (5), S.Car. (6)
Ascochyta asclepiadis Ell. & Ev., leaf spot. Del. (5)
Cercospora asclepiadorae Ell. & Kell., leaf spot. Ala., Tex. (1); Del., Kans., S.Car. (6)
C. clavata (Gerard) Cke. General, especially in the Central and Western States; commonly on (5), also on (1,2,4)
C. elaeochroma Sacc. (=C. clavata?), N.Dak. (2,5), Wis. (6)
C. hanseni Ell. & Ev. Calif. (5,6)
C. illinoensis Barth. Ill., Mass., N.Y. (5)
C. incarnata Ell. & Ev. Ohio (4), Wis. (6)
C. venturioides Pk. Wash. (2); Ind., Mo., N.Y., Tex. (5) Fla., N.Y., N.Car., Tex., P.R. (6). Regarded by some as a synonym of C. clavata.
Colletotrichum fusarioides (Ell. & Kell.) O'Gara. See Glomerella fusarioides.
Diaporthe arctii (Lasch) Nits., on stems. N.J. (1); Iowa, W.Va. (5); Ga. (6)
Didymella cornuta Ell. & Ev., on stems. N.Y. (5)
Diplodia asclepiadea Cke. & Ell., on stems. N.J. (5)
Erysiphe cichoracearum DC., powdery mildew. Ohio (5); Ill., P.R. (6)
Glomerella fusarioides Edg., anthracnose, leaf and stem blight. N.Mex., Utah (2); Kans., Mass., Mont., N.J., N.Y., Pa., Tex. (5)
Phoma asclepiadea Ell. & Ev., stem blight. Utah (2), N.Y., W.Va. (5); Tex. (6)
Phomopsis missouriensis Bub., on stems. Mo. (6)
Phyllactinia corylea Pers. ex Karst., powdery mildew. N.Y. (5)
Phyllosticta cornuti Ell. & Kell., leaf spot. Ill., Kans., Mich. (5)

ASCLEPIAS cont.

P. tuberosa Ell. & Martin. Ill., N.J. (1); Del. (4)
Phymatotrichum omnivorum (Shear) Dug., root rot. Tex. (1,5,6)
Pleospora diplospora Ell. & Ev., on stems. Kans. (4)
Puccinia bartholomaei Diet. (O,I), rust. Widespread, especially in the Central and Western States, on (1,2,3,5,6). II and III on Bouteloua spp.
P. concrescens Ell. & Ev. (III), rust. P.R. (6)
P. seymouriana Arth. (O,I), rust. N.&S.Dak. (2); Mo., Wis. (5); N.Y. (6). II and III on Spartina spp.
P. vexans Farl. (O,I), rust. Wis. (1). II and III on Bouteloua curtipendula.
Pyrenophora depressa Pk., on stems. Calif. (6)
Rhizoctonia solani Kuehn, root rot. Tex. (5,6)
Rhodochytrium spilanthidis Lagh. var. asclepiadis Farl., on leaves. Kans. (6)
Rosellinia aquila DeNot., root rot. Tex. (6)
Scolecotrichum asclepiadis Ell. & Ev., on leaves. Mich. (5), Calif. (6)
Septoria asclepiadicola Ell. & Ev., leaf spot. N.Y. to Ind., Iowa, and Wis. (4); Pa. (5); Md., Mo. (6)
? S. cryptotaeniae Ell. & Rau, leaf spot. Iowa (4,5), Tex. (5,6)
S. incarnata Ell. & Ev. Kans. (4), Ind. (5)
Sphaeropsis sphaerospora Pk., on stems. N.Y. (5)
Stagonospora zonata J. J. Davis, leaf spot. Wis. (5)
Uromyces asclepiadis (Schw.) Cke. (II,III), rust. Widespread on the spp. listed, and others, throughout their respective ranges from Me., to Fla., Tex., and S.Dak. O and I unknown.

Mosaic -- virus. In part Marmor cucumeris Holmes, Cucumis virus 1 K.M.Sm., reported in Fla., Ill., Ky., Mich., N.J., N.Y., Wis. (5,6); in part not identified.
Yellows -- virus (Chlorogenus callistephi Holmes, Callistephus virus 1 K.M.Sm.) Wis. (5)

GONOLOBUS (ASCLEPIADACEAE)

GONOLOBUS spp., SAND-VINE; especially G. CAROLINENSIS (Jacq.) Schultes (1), G. GONOCARPOS (Walt.) Perry (2), and G. SUBEROSUS (L.) R. Br. (3). Perennial vines of the Southeastern and Southern States, sometimes grown for ornament or plant cover.

Cercospora gonolobi Ray, leaf spot. Okla. (2)
C. vincetoxici Ell. & Ev. Ala. (1), Tex. (sp.)
Meliola bidentata Cke., black mildew. N.Car. (2)
Phymatotrichum omnivorum (Shear) Dug., root rot. Tex. (sp.)
Plasmopara gonolobi (Lagh.) Swing., downy mildew. Md. to Fla. and Tex. (1,2,3)

GONOLOBUS cont.

Puccinia obliqua Berk. & Curt. (III), rust. Gulf States to S.Car., Ky. and Okla. (1,2,3)

Uromyces asclepiadis (Schw.) Cke. (II,III), rust. W.Va. (2), Ind. (sp.)

Septoria sp., leaf spot. La. (2)

PHILIBERTIA (ASCLEPIADACEAE)

PHILIBERTIA CLAUSA Jacq. (1), other spp. (2). Twining perennial herbs of the far South, sometimes grown for ornament.

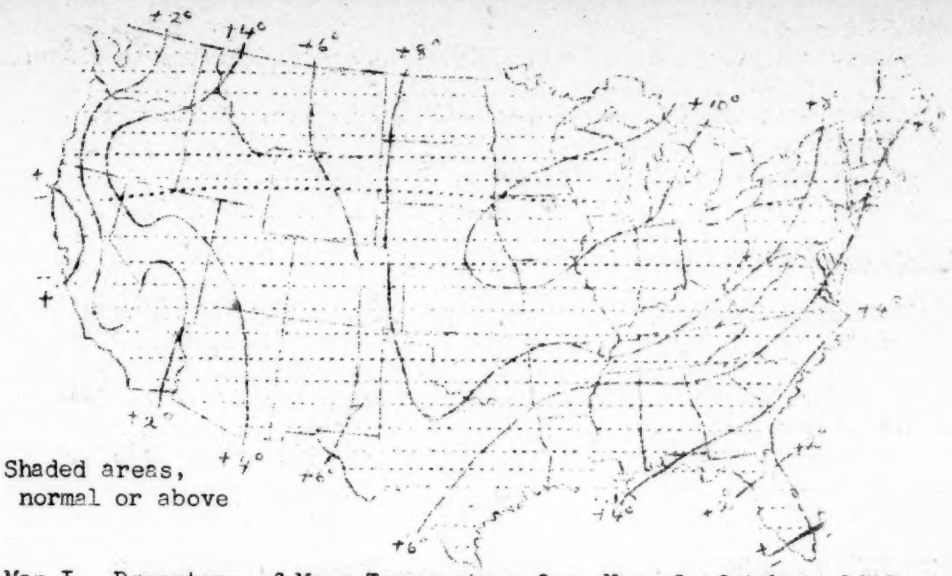
Phyllactinia corylea Pers. ex Karst., powdery mildew. Fla. (2)

Puccinia bartholomaei Diet. (O,I), rust. Ariz. (2)

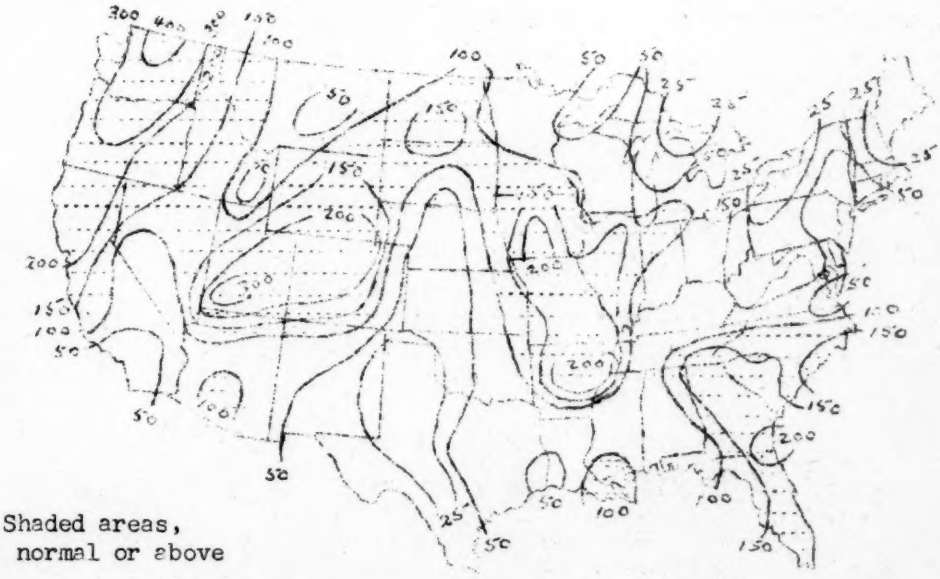
P. obliqua Berk. & Curt. (III), rust. Fla. (1), Ariz., Calif., N.Mex., Tex. (2)

VINCETOXICUM (ASCLEPIADACEAE). For American spp. that have been referred to this genus, see Gonolobus.

DIVISION OF MYCOLOGY AND DISEASE SURVEY



Map I, Departure of Mean Temperature from Normal, October, 1947



Map II. Percentage of Normal Precipitation, October, 1947

OCTOBER WEATHER

From U. S. Department of Commerce, Weather Bureau, Weekly Weather and Crop Bulletin for week ending November 4, 1947